Chapter 15

Guidelines for Enforcement of Mechanical Requirements for Rail Grinding Equipment

Introduction

Subsequent to an incident in November 2006, that involved a rail grinder (rail grinding set), and corresponding investigations by the Federal Railroad Administration (FRA), there have been several inquiries about the proper application of regulatory and statutory requirements to the type of equipment involved in the incident. Rail grinding sets are unique and warrant different treatment than self propelled vehicles that are considered locomotives under Federal regulations. The two major U.S. operators of rail grinding trainsets are Loram and Harsco. Major railroads also operate their own rail grinding equipment. Typical configurations for rail grinding trainsets are noted on the next page as (1) locomotive powered grinding trains, and (2) self powered rail grinding units. The following are guidelines for enforcing the various requirements that apply to the rail grinding sets.

Guidelines for Enforcement of Mechanical Requirements:

- 49 USC 20701 (Locomotive Inspection Act) - The power unit and the location of the control stand in the rail grinding sets each constitute a locomotive under the statute, but not the regulations.

  49 CFR Part 229 (Part 229) does not apply to the rail grinders because the locomotives regulated under Part 229 do not include specialized maintenance equipment. The Locomotive Inspection Act permits the FRA to write violations when a "locomotive or tender and its parts and appurtenances are [not] in proper condition and safe to operate." To determine whether a power unit or the location of the control stand is safe to operate, FRA may use regulatory provisions including those contained in Part 229 as guidelines. FRA inspectors commonly make safety determinations based on observations of equipment and records, as well as industry and regulatory experience. After determining that a power unit or the location of the control stand is unsafe to operate, FRA should cite only the statute, and not the regulation when recommending a violation.

  Although Part 229 does not apply to rail grinding sets, the regulation should not be ignored when assessing the safety of the equipment. The safety rationale supporting regulatory requirements, particularly those contained in Part 229 subpart C, may be relevant to the rail grinding sets, because the equipment is being used in a similar manner. The FRA may frame a violation of the statute using facts that would commonly support a violation of the federal regulations. For example, if FRA discovers a rail grinding set with a three inch flat spot on wheel R1 of the power unit, it would be proper for a violation report to state that "the power unit of the rail grinding set is not safe to operate as required by 49 USC 20701, because

Typical Configuration of Locomotive Powered Rail Grinder Train

Typical Configuration of Self-Powered Rail Grinder Train

wheel R1 has a three inch flat spot. Running this rail grinding set with a flat spot of this size could lead to a derailment." This is not a Part 229 violation, but it is a defective condition that makes the power unit or the location of the control stand unsafe to operate. In this example, FRA is using the wheel requirement from 49 CFR 229.75 to inform its safety assessment of the equipment and describe the violation. Other defective conditions under Part 229 may not make the power unit or the location of the control stand unsafe to operate. For example, it would be very difficult to argue that a defective step light makes the power unit or the location of the control stand unsafe to operate. Ultimately, the FRA inspector is responsible for explaining in the violation report why the defect makes the power unit or the location of the control stand unsafe to operate.

- 49 USC 20302 (Safety Appliance Act) - The rail grinding sets are a train under the statute, but not the regulations.

  The power brake portions of the statute apply to the rail grinding sets, and the specific requirements in 49 CFR Part 232 are not applicable. Section 20302(a)(4) requires that a locomotive be equipped with a power-driving wheel brake and appliances for operating the train-brake system.

  - 50% equipped brake requirement: Section 20302(a)(5) requires that at least 50% of the vehicles in a train be equipped with power brakes and that all the vehicles on an associated train line that are equipped with power brakes shall have their brakes used and operated by the engineer.

    - 100% operative brake requirement: As all of the units in a rail grinding set are equipped with power brakes and are on an associated train line, the statute requires that 100% of the vehicles in the train have operative brakes unless they are being moved for repair under 49 USC 20303.

  - Brake inspections: Because the rail grinding sets are subject to Section 20302(a)(5), FRA expects the railroads and operators of this equipment to have an inspection regimen in place that will ensure that the crews operating the equipment are aware of whether the brakes are in compliance with the applicable statutory requirements.

  - Other safety appliance requirements: Section 20302(a)(1) and (a)(2) require that vehicles be equipped with efficient hand brakes, sill steps, and other safety appliances that ensure the safety of employees as they mount and dismount equipment. Except for those appliances addressed by 49 CFR Part 231 (see discussion below), FRA should cite only the statute for violations of this type.

- 49 USC 20303 (Safety Appliance Act) - Section 20303 (which restricts the use and movement of vehicles with defective or inoperative safety appliances) only permits the movement of a vehicle with defective safety appliances to the nearest available place where the necessary repairs can be performed.

  If power brakes are discovered defective at a location where repairs are routinely made, repairs are required to be made before the vehicle departs that location. Similarly, if the brakes become defective en route, the rail grinding set may be moved only for the purpose of repair to the nearest location where the necessary repairs can be made. Guidelines for determining locations where necessary repairs can be performed can be found in 49 CFR 232.15(f). FRA should cite only the statute for violations of this type.

- 49 CFR Part 231 (Safety Appliance Regulation) - Due to their unique design and purpose, rail grinding sets are considered "cars of special construction" under 49 CFR 231.18. Therefore they are required to have, as nearly as possible based on the design limitations of the vehicle, the same complement of handholds, sill steps, ladders, hand brakes, and running boards as required for a car of the nearest approximate type. As with any equipment covered by 49 CFR Part 231, any additional safety appliances on the equipment must comply with the requirements of 49 CFR Part 231.

Guidelines for Enforcement of Roadway Maintenance Machine Requirements:

49 CFR Part 214 (Railroad Workplace Safety) - The rail grinding sets must comply with 49 CFR 214, Subparts C and D.

Subpart D: "On-Track Roadway Maintenance Machines and Hi-Rail Vehicles" contains various requirements regarding the safety equipment required to be on such machines as well as provisions related to their design and operation. Subpart C: "Roadway Worker Protection" includes training requirements that apply to operators of rail grinding sets. These requirements are intended to prevent accidents and casualties. For convenience, the attached chart "Application of 49 CFR Part 214, Subpart D," summarizes the most significant provisions of 49 CFR Part 214, Subpart D that have been traditionally applied to on-track roadway maintenance machines (RMMS). It is not intended to be all-inclusive. It should be noted that additional or more stringent requirements in the CFR or in the railroad safety statutes may also apply. For example, when the rail grinding sets are moved over the road, 49 USC 20302 and 20303 apply. Recommendations of violation against a rail grinding set should

be based on the same supporting facts and cite the same pertinent regulatory provisions as other equipment covered by 49 CFR Part 214.

Guidelines for Enforcement of Operating Practices Requirements:

49 CFR Part 240 (Engineer Qualifications) - The rail grinding sets constitute specialized roadway maintenance equipment under 49 CFR Part 240 (Part 240).

The rail grinding sets, like most specialized maintenance equipment, are unique in both its design and operation. Requiring a certified locomotive engineer (LE) to operate such equipment when it is moved from one work site to another would be operationally restrictive and potentially unsafe since in most instances, an LE certified under Part 240 will not be familiar with the specific operation of specialized maintenance equipment. Safety is better served by permitting an individual familiar with the specific piece of equipment to operate it from one work site to another with the aid of a pilot, where appropriate. Although Federal regulations do not specifically address the territorial qualifications of either the operator or any pilot that may be utilized when operating specialized maintenance equipment, FRA believes that safe railroading dictates that such individuals should be qualified and familiar with the territory over which the equipment will be operated. FRA strongly recommends and encourages the use of individuals that are qualified on the territory over which the equipment will be operated when such equipment is traveling to and from a work site.

Application of 49 CFR Part 214, Subpart D

(Note: There may be additional or more stringent requirements applicable to this equipment, its owner, and its operator in this or other subparts or parts of the CFR or in the railroad safety statutes, particularly, 49 CFR Part 232 and 49 USC Sections 20302 and 20303. This chart is not intended to be all-inclusive and is provided as a helpful summary of the requirements in subpart D of Part 214 and should be used in conjunction with the regulatory text to determine compliance with this subpart.)

Requirement	On-track RMMS - non-highway and light weight greater than 7,500 lbs. and not used exclusively for inspection of track		
	Pre 1/1/91	Existing - post 1/1/91	New - ordered after 12/26/03 and completed after 9/27/04
Beacon (360-degree warning light)	Not Required*	Not Required*	509 (c) (RMM without fixed roof and less than 17,500 lbs. exempt)
Brake light (or reflective material, or reflective device)	Not Required*	517 (d) - retrofit - brake light or reflective material, or reflective device	509 (d) - brake light
Braking system	Not Required* but see 529	Not Required* but see 529	507 (a)(5)
Change-of-direction alarm	Not Required*	517 (a) - retrofit *If adds safety value	511 (b)
Daily inspection	527 (a)	527 (a)	527 (a)
Fire extinguisher	Not Required*	Not Required*	507 (a)(7)
First aid kit	Not Required*	Not Required*	507 (a)(6)
Flagging equipment	521 (lone, or lead and trailing piece in roadway group if RR rules require flagging equipment)	521 (lone, or lead and trailing piece in roadway group if RR rules require flagging equipment)	521 (lone, or lead and trailing piece in roadway group if RR rules require flagging equipment)
Headlight	513 (c)	513 (c)	509 (a)
Heating and ventilation	Not Required*	517 (b) - retrofit (required if operated at temp. less than 50 deg. and equipped or has been equipped)	505 (g) for RMM other than 505 (a)(1)-(5), regulators, etc. with enclosed cabs
Horn	513 (b) permanent or portable	513 (b) permanent or portable	511 (a) permanent
Light weight display	Not Required*	517 (c) - retrofit	507 (d)
Operator seat (or position, if standing)	527 (c)(5)	527 (c)(5)	507 (a)(1) except as required under 507(b); operator standing
Record of defective conditions	533 (d)	533 (d)	533 (d)
Rearward viewing devices	Not Required*	Not Required*	509 (e)

Requirement	On-track RMMS - non-highway and light weight greater than 7,500 lbs. and not used exclusively for inspection of track		
	Pre 1/1/91	Existing - post 1/1/91	New - ordered after 12/26/03 and completed after 9/27/04
Safe and secure position - handholds, handrails, or a secure seat for workers transported on machine; protection from moving parts	513 (a) - retrofit	513 (a) - retrofit	507 (a)(2)
Safe and secure position for riders - identification by stenciling or other written notice (if used)	518	518	518
Safety glass & wipers	Not Required*	517 (e) - retrofit/replace	507 (a)(4)
Secure footing for floors, decks, stairs, and ladders	519	519	519
Speed indicator	Not Required*	Not Required*	507 (c) - more than 32,500 lbs and speed greater than 20 mph
Tag defective item(s)	527 (b)	527 (b)	527 (b)
Towing	525	525	525
Work lights	Not Required*	Not Required*	509 (b)

* NOTE on “not required”: If an existing on-track RMM is equipped with a device only required on new equipment, the device should be in proper working condition. If inspectors encounter a broken or inoperable “not required” device, they should write a comment to the railroad describing the defective condition and indicate that a machine with “a condition that inhibits its safe operation” is subject to a good faith challenge, especially where roadway workers working on or near the machine may be relying in part on such a device to alert them to a machine’s presence or proximity. FRA expects that any such inoperable device shall be discussed in the job briefing.